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AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

NOVEMBER 15, 1936



Stewartia Pentagyna

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Fertilizers for Ornamental Plants
Shade Tree Diseases
Plant Experiences of 1936
Test Outdoor Chrysanthemums

AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

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AFTER ELECTION.

The dozen days since the presidential election have been marked by a strong surge upward in general business. It is the natural response to the spending which has been done by the government and is increasingly practiced by the public. Government disbursements are being supported to this end by extra dividend declarations by corporations seeking to escape the undistributed earning tax. Increases in wage scales and year-end bonuses are putting still more money into the public purse. With low interest rates and threats of rising prices, there is less incentive to save than to spend.

While there is not much revival in the building industry, there is everywhere an inclination to repair and improve property as an investment against the day when dollars will not go so far in that direction. This tendency is in nurserymen's favor.

Nothing is a better investment for years ahead than nursery stock planted in orchard or home grounds. The initial investment is small compared to the value of the trees and plants when grown to maturity. There is no question, either, that current prices for nursery stock are low by any yardstick one uses.

Here is a sales opportunity ready for nurserymen throughout the country. To those persons who are spending, the beauty and enjoyment of trees and shrubs should be potent arguments. For those persons who are investing for the future, plantings

will add to the value of home or farm in years to come.

DIFFERENT VIEWS.

The nurseryman who grows stock by the acre and has his mind chiefly on crop production is likely to have wholesale figures in mind and regard the individual plant cheaply.

The amateur gardener who buys a few plants at retail has in mind a far different price, and the individual plant may have considerable value, comparatively, to him.

If the public idea changes in some instances, it may be the result of too great generosity on the part of those nurserymen who do not see the same value in their merchandise as that the amateur places on it.

For example, a nurseryman donates the planting about a school, church or other institution. He does it because of his own liberality and his belief that such places should have the beautification of plants. But does the automobile dealer donate the school bus or the art gallery donate the paintings that hang in the halls? Not that we have heard of.

That is one illustration. Every reader can think of dozens of others. Nurserymen are inclined to be too liberal of their merchandise for their own good. The public in some cases wonders if the stock is, after all, worth the prices that appear in the retail catalogues.

The true merchant is the man who takes the public's point of view. He sees the value of an article to buyers. For an item of little esteem he asks but a low price, seeking a little profit. But for the product in high regard he increases the mark-up as far as the public is willing to pay.

Isn't there a lesson in this? Should not the attitude of the nurseryman be more of the merchant and less of the producer? Should we not seek to cultivate the high regard of the public in our merchandise? Give it real value and worth in the eyes of the buyers, and prices should be commensurately higher and sales better.

STEWARTIA PENTAGYNA.

With the average American gardener doting on virtually all plants

with large flowers, the bigger the better, it is strange that he has overlooked the truly lovely *Stewartia pentagyna*, which develops its showy cup-shaped blooms in late summer—July and August. Although flowers with five petals are typical of this genus, those of *pentagyna* frequently carry six. The petals are white, sometimes creamy, with a wavy crenulate margin. The blooms of the species measure two to three inches in diameter, but there is a variety, *grandiflora*, that has flowers up to four and one-half inches across, with purple stamens instead of orange yellow as in the type.

Although the native habitat of this shrub is from North Carolina and Tennessee south to Florida, which accounts for its common names, mountain and Allegheny *stewartia*, it can be made to thrive much farther north. It is considered hardy to Massachusetts, Rehder placing it in zone V. When planted in its northern limitations, it should be given a protected, warm, sunny spot and special care over winter.

The mountain *stewartia* thrives in a neutral, deep, rich, moderately moist and porous soil. It can be propagated from seeds sown as soon as ripe or held until spring and planted after frosts are past. Cuttings of half-ripened or almost fully mature growth will root readily under glass when available in late summer. Layering can be resorted to, also.

Because it sometimes reaches a height of fifteen feet, the Allegheny *stewartia* is regarded by some as a small tree, and it may be trained to such a form, but it is naturally shrubby, though of upright growth, as will be noted in the specimen illustrated on the front cover. Besides its large attractive flowers, this plant has handsome foliage, the leaves being from two to five inches long, bright green, somewhat gray green beneath, but changing to bright scarlet and orange in autumn. The *stewartias* belong to the tea family, in which are found those other showy plants, the camellias and *gordonia*s. *Stewartia pentagyna* has great potentialities. How much longer will it be ignored?

AMERICAN NURSERYMAN

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The Chief Exponent of the American Nursery Trade

*The Nurseryman's Forte:
To Make America More Beautiful and Fruitful*

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NOVEMBER 15, 1936

No. 10

Fertilizers for Ornamental Plants

Recommended Practices for Different Groups of Plants According to Availability, Soil Reaction and Cost of Fertilizers—By L. C. Chadwick

Practices in applying fertilizers to ornamental plants within nurseries and in landscape plantings show little standardization throughout nursery areas. This lack of uniformity might be expected, since little investigational work has been conducted to give a basis for specific recommendations. Much fertilizer has been applied to ornamental plants without a knowledge of its comparative cost, possible reaction in the soil and its ultimate effect upon the plant. This article, with accompanying charts, has been prepared to give some information concerning these and other perplexing problems of fertilization.

Ideas concerning the proper fertilization of ornamental plants and especially nursery stock vary considerably. This is due, partially at least, to the variations existing in the manner of growing different types of plants. Occasions arise where fertilizers are added for the purpose of forcing growth. With newly transplanted stock that has been heavily pruned this practice may be advisable, but with stock handled properly, little forcing, in the true sense of the word, is desirable.

High Quality Is Object.

A better policy to adopt is to add fertilizers to the extent of maintaining sufficient vigor to produce high-quality stock. High-quality stock will make money for the grower, while poor-quality plants will or should find their way to the brush pile. Fertilization to the extent of forcing rapid growth frequently does not result in the highest quality. A normal uniform rate of growth is the

most desirable, regardless of whether the plants are growing in the nursery or are established plants in landscape plantings.

The accompanying charts are presented to give necessary information in a concise form. Some explanation of these is necessary. The fertilizer chart gives the analysis, influence upon soil reaction, availability and cost of seventeen different fertilizers. The analysis, influence on soil reaction, availability and notes require no elucidation. The cost per ton will, of course, vary in different localities, thereby changing the cost per pound of the essential elements.

Explanation of Cost Figures.

The prices given are those current in Columbus, O. The figures should be referred to as a comparative basis for determining costs and the cheapest material to use. The accompanying figures may be readily changed to fit the individual's scale of prices.

Since both essential elements and complete fertilizers are used in fertilization practices, costs are given per pound for each of the essential elements and for the total available units in the fertilizer.

Normally, fertilizers are purchased for any one or all of the essential elements of nitrogen, phosphorus and potash. The percentages of these materials in the different fertilizers vary greatly. For example, according to the accepted analysis, ammonium sulphate contains twenty per cent nitrogen, and nitrate of soda, fifteen per cent. Thus in a ton of these materials there would be 400 pounds and 300 pounds of nitrogen, respec-

tively. At the given price per ton of these materials, the grower would pay 9.2 cents per pound for nitrogen, using ammonium sulphate, and 13.4 cents if he used nitrate of soda. The cost per pound of the other essential elements and the total units is figured likewise.

Elements in Ton of Fertilizer.

Reasoning further, in a commercial brand of fertilizer such as a 4-12-4 there is a total of twenty units (4 N, 12 P₂O₅, 4 K₂O) or in other words, 400 pounds of the essential elements are combined in a ton of 4-12-4 fertilizer. Thus, based on the price given, the cost of this fertilizer is 7.4 cents per pound, considered on the basis of the total units it contains.

It should be apparent from this discussion that the price per ton does not give a clear indication of the real value of the fertilizer. The nurseryman or gardener should figure its value on the quantity of the essential element or elements he wishes to apply.

Referring to the chart again, it can be seen that if nitrogen alone is the element desired, its cheapest source is ammonium sulphate. It is apparent how uneconomical it would be to apply 4-12-4 if nitrogen alone were desired. The cost would be approximately four times as much per pound. Yet this frequently happens when the grower buys one fertilizer to satisfy all of his needs or he applies it just because it is on hand.

The cheapest sources of phosphorus are superphosphate and Ammo-phos. The latter is an espe-

cially useful source if both nitrogen and phosphorus are desired. Tests have shown that the phosphorus in Ammo-phos is more readily available than it is in superphosphate or bone meal. Potassium chloride is a satisfactory source of potash, and potassium nitrate where both nitrogen and potash are necessary.

The most profitable complete fertilizer to buy will depend upon its use and the total units it contains. The choice of either cottonseed meal or tankage for ericaceous plants will depend on local prices.

A word may well be said about bone meal. Growers frequently employ this material to supply phosphorus and to add a small quantity of nitrogen. Based on the figures given, the same quantity of essential elements contained in 100 pounds of bone meal could be obtained from ammonium sulphate and superphosphate for 3.3 cents less than the cost of the bone meal, and in addition, the elements in ammonium sulphate and superphosphate are more readily available.

A still better source of nitrogen and phosphorus is Ammo-phos. The cost of enough Ammo-phos to give the same quantity of essential elements as is contained in 100 pounds of bone meal would be 30 cents less than the cost of the bone meal.

Tables are presented to give the fertilizer recommendation for ever-

green, deciduous, bulbous and herbaceous plants in landscape plantings and for plants of different ages when handled in sandy, silt and clay loam and clay soils under nursery conditions. The modifying conditions of manure or green crops plowed under are considered. Varying individual conditions will necessitate changes in these recommendations, but the tables may be used as a standard from which to work.

Nitrogen, phosphorus, potassium or complete fertilizers may be used as a side-dressing in addition to those recommended, or substituted as the individual case demands. The recommendations given should, however, satisfy the plants mentioned under the conditions considered.

(To be continued.)

HACKBERRY AS SHADE TREE.

The hackberry has received comparatively little attention as a shade tree, although it occurs over much of the United States east of the Rocky mountains.

It is becoming increasingly evident that there should be greater diversity in our street trees and with this in mind attention is called to the hackberry by E. Porter Felt, of the Bartlett tree research laboratories. It has good qualities as well as defects. The possibilities of the hackberry in the northeast are indicated by two excep-

tional trees growing at Lowell, Mass. The smaller in 1890 had a girth at breast height of over eight feet, a height of forty-five feet and a limb spread of fifty feet. Ordinarily the hackberry is a small tree and well adapted to narrow streets.

The hackberry has been condemned because of the frequent infestation of leaves and buds by gall-producing jumping plant lice, the deformities they inhabit disfiguring the foliage in summer and marring the appearance of the twigs in winter. The hackberry is also somewhat commonly disfigured or adorned, depending upon one's viewpoint, by witches'-brooms, a massed twiggy growth caused by plant mites and possibly by a fungus. This trouble is especially common in the vicinity of New York city. Recent investigations have demonstrated the possibility of controlling both of the above-mentioned gall insects and it is probable that systematic spraying would eliminate the witches'-brooms. The hackberry is much less subject to attack by insect pests and fungous diseases than the elms.

The sugarberry is particularly desirable in the regions of little rainfall in the midwest. The eastern hackberry prefers moist soil, though it grows reasonably well in dryer locations. The trees are usually moderate-size with rather open crowns and are rated as being short-lived.

FERTILIZER CHART

Analysis, Influence on pH, Availability and Cost of Various Fertilizers

Material	Analysis	Influence on soil reaction	Availability	Approximate cost per ton	Cost per pound of nitrogen (N)	Cost per pound of phosphorus (P ₂ O ₅)	Cost per pound of potash (K ₂ O)	Total units	Cost per pound of total units	Notes
Ammonium sulphate	20-0-0	Acid	Rapid	\$36.90	\$0.992	....	....	20	\$0.992	Less available in cold and acid soils.
Nitrate of soda	15-0-0	Alkaline	Rapid	40.40	0.134	....	....	15	0.134	Continued applications may cause toxicity.
Calcium nitrate	15-0-0	Alkaline	Rapid	33.00	0.11	....	....	15	0.11	Contains about 28% lime, CaO.
Ammo-phos	11-48-0	Little	Fairly rapid	60.00	0.272	\$0.063	....	59	0.051	Phosphorus readily available.
Potassium nitrate	13-0-44	Slight acid	Rapid	60.00	0.231	....	\$0.068	57	0.053	Good on peat soils where N and K are needed.
Nitro-phoska	15-30-15	Little	Rapid	75.00	0.25	0.125	0.25	60	0.063	10% of N in form of nitrate nitrogen; 90% of N in form of ammonia salts.
Cottonseed meal	7-3-2*	Acid	Slow	30.00	0.214	0.50	0.75	12	0.125	Good for ericaceous plants.
Tankage	8-10-0*	Little	Slow	50.00	0.313	0.25	....	18	0.139	Good for ericaceous plants.
Soy bean meal	6.5-3-1*	Slight acid	Slow	30.00	0.231	0.50	1.50	10.5	0.143	Good for ericaceous plants.
Superphosphate	0-20-0**	Alkaline	Relatively slow	23.10	....	0.058	....	20	0.058	Penetrates soil very slowly.
Bone meal	3-22-0*	Alkaline	Very slow	31.70	0.528	0.072	....	25	0.063	Nitrogen readily available.
Potassium chloride	0-0-50	Slight acid	Relatively rapid	42.00	....	....	0.042	50	0.042	Most active in acid soils.
Potassium sulphate	0-0-48	Slight acid	Relatively rapid	53.70	....	....	0.056	48	0.056	Most active in acid soils.
Commercial brand	2-10-10	.....	.....	27.30	0.683	0.137	0.137	22	0.062	Recommended fertilizer brand.
Commercial brand	2-12-6	.....	.....	27.70	0.693	0.115	0.231	20	0.069	Recommended fertilizer brand.
Commercial brand	4-12-4	.....	.....	29.60	0.37	0.123	0.37	20	0.074	Recommended fertilizer brand.
Commercial brand	10-6-4	.....	.....	34.70	0.174	0.289	0.434	20	0.087	Recommended fertilizer brand.

*Approximate analysis.

**16% and 46% superphosphate obtainable.

FERTILIZERS FOR NURSERY CROPS

Age	Soil types and modifying conditions				Notes
	Manure or green crop plowed under		No manure or green crop		
	Sandy soils	Silt and clay loams and clays	Sandy soils	Silt and clay loams and clays	
NARROW-LEAVED EVERGREENS.					
Seed beds Seedlings to stand 1 to 2 years			1-in. mulch of peat moss	1-in. mulch of peat moss	Manure or green crops not recommended for seed beds. Apply mulch as seedlings reach sufficient size. Apply tankage, 25 lbs. per 1000 sq. ft., mid-July if soil is mostly sand.
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	Tankage, 35 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	Tankage, 30 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	Green manure crop recommended. Apply mulch directly after planting. Apply tankage at time of bed preparation and again second year if plants stand 2 years. Cottonseed meal may be substituted for tankage if local price warrants change.
Lining-out stock	No fertilizer first yr. 10-6-4, 400 to 500 lbs. per acre second year	No fertilizer first yr. 10-6-4, 300 to 400 lbs. per acre second year	10-6-4, 400 to 500 lbs. per acre	10-6-4, 300 to 400 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter, if necessary to obtain normal growth.
Field stock	10-6-4, 700 to 750 lbs. per acre	10-6-4, 600 to 700 lbs. per acre	10-6-4, 750 to 800 lbs. per acre.	10-6-4, 700 to 750 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter, if necessary to obtain normal growth.
BROAD-LEAVED EVERGREENS* ERICACEOUS PLANTS AND OTHERS REQUIRING AN ACID SOIL.					
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	Tankage, 35 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	Tankage, 30 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	Soils should be acid with all sizes of stock. Addition of acidifying agents should be based upon actual soil tests. Green manure crop highly recommended, plus a liberal incorporation of peat moss. Apply mulch directly after planting. Apply tankage at time of bed preparation and each year thereafter while stock is in beds.
Lining-out stock	No fertilizer first yr. Cottonseed meal, 1500 lbs. per acre second year	No fertilizer first yr. Cottonseed meal, 1000 lbs. per acre second year	Cottonseed meal, 1500 lbs. per acre	Cottonseed meal, 1000 lbs. per acre	Tankage may be substituted for cottonseed meal if local price warrants change. Apply at planting and each year thereafter, if necessary to obtain normal growth.
Field stock	Cottonseed meal, 1500 lbs. per acre	Cottonseed meal, 1000 lbs. per acre	Cottonseed meal, 2000 lbs. per acre	Cottonseed meal, 1500 lbs. per acre	Apply superphosphate, 1000 lbs. per acre, and the cottonseed meal when soil is prepared for planting. Apply cottonseed meal each year thereafter, if necessary to obtain normal growth.
OTHER BROAD-LEAVED EVERGREENS*					
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	Tankage, 35 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	Tankage, 30 lbs. per 1000 sq. ft. 1-in. mulch of peat moss	Green manure crop highly recommended. Apply mulch directly after planting. Apply tankage at time of bed preparation and each year thereafter while stock is in beds.
Lining-out stock	No fertilizer first year. 10-6-4, 400 to 500 lbs. per acre second year	No fertilizer first year. 10-6-4, 300 to 400 lbs. per acre second year	10-6-4, 400 to 500 lbs. per acre	10-6-4, 300 to 400 lbs. per acre	Use 10-6-4 with organic nitrogen if possible. Apply at time of preparing soil and each year thereafter, if necessary to obtain normal growth.
Field stock	10-6-4, 600 to 700 lbs. per acre	10-6-4, 500 to 600 lbs. per acre	10-6-4, 700 to 750 lbs. per acre	10-6-4, 600 to 700 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter, if necessary to obtain normal growth.
ROSES					
Stock plants 1st year	4-12-4, 700 to 750 lbs. per acre	4-12-4, 600 to 700 lbs. per acre	10-6-4, 600 to 700 lbs. per acre	10-6-4, 500 to 600 lbs. per acre	Apply at time of preparing soil. Use 4-12-4 and 10-6-4 fertilizers with at least one-half of nitrogen from organic source.
Budded plants 2d year	2-10-10, 600 to 700 lbs. per acre	2-10-10, 500 to 600 lbs. per acre	2-10-10, 700 to 750 lbs. per acre	2-10-10, 600 to 700 lbs. per acre	Apply in early spring and work it well into the soil.
OTHER DECIDUOUS SHRUBS AND TREES					
Seed beds Seedlings to stand 1 to 2 years			1-in. mulch of peat moss	1-in. mulch of peat moss	Manure or green crops not recommended for seed beds unless plowed under 7 to 8 months before seeding. Apply mulch as seedlings reach sufficient size. If soils are very sandy apply tankage, 25 lbs. per 1000 sq. ft. in mid-July.
Transplant beds Seedlings or cuttings	1-in. mulch of peat moss	1-in. mulch of peat moss	1-in. mulch of peat moss. 4-12-4, 20 lbs. per 1000 sq. ft.	1-in. mulch of peat moss. 4-12-4, 15 lbs. per 1000 sq. ft.	Green crops recommended. Apply peat mulch directly after planting. Apply 4-12-4 when beds are prepared.
Lining-out stock	No fertilizer	No fertilizer	4-12-4, 800 to 900 lbs. per acre	4-12-4, 600 to 700 lbs. per acre	Apply fertilizer at time soil is prepared for planting.
Field stock	10-6-4, 750 to 800 lbs. per acre	Ammo-phos 350-450 lbs. per acre	10-6-4, 800 to 900 lbs. per acre	Ammo-phos 400-500 lbs. per acre	Apply fertilizers in spring and only if plants are making poor growth.
GLADIOLI					
Plants for corm production	2-12-6, 4 lbs. per 100 ft. of row	2-12-6, 3 lbs. per 100 ft. of row	4-12-4, 700 to 750 lbs. per acre. 2-12-6, 3 lbs. per 100 ft. of row	4-12-4, 600 to 700 lbs. per acre. 2-12-6, 2 lbs. per 100 ft. of row	Apply 4-12-4 when soil is prepared for planting. Apply 2-12-6 as side-dressing when plants are 8 to 10 inches high.
Plants for flower production	4-12-4, 4 lbs. per 100 ft. of row	4-12-4, 3 lbs. per 100 ft. of row	4-12-4, 450 to 500 lbs. per acre. Also 3 lbs. per 100 ft. of row	4-12-4, 400 to 500 lbs. per acre. Also 2 lbs. per 100 ft. of row	Apply first (in plots with no manure or cover crops) when soil is prepared for planting. Also apply as side-dressing when plants are 8 to 10 inches high.
LILIES					
Plants for bulb production	2-10-10, 400 to 500 lbs. per acre	2-10-10, 400 to 500 lbs. per acre	4-12-4, 500 to 600 lbs. per acre	4-12-4, 500 to 600 lbs. per acre	Apply fertilizer in row at planting time. A straw mulch over rows is probably desirable.
PEONIES					
Field plants	2-10-10, 800 to 900 lbs. per acre	2-10-10, 700 to 800 lbs. per acre	2-10-10, 1000 to 1200 lbs. per acre	2-10-10, 800 to 1000 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter if plants remain in same location.
OTHER HERBACEOUS PERENNIALS					
Field plants	4-12-4, 600 to 700 lbs. per acre	4-12-4, 500 to 600 lbs. per acre	4-12-4, 900 to 1000 lbs. per acre	4-12-4, 800 to 900 lbs. per acre	Apply at time of preparing soil for planting and each year thereafter that plants remain in field. For perennials grown for foliage, substitute 10-6-4 for 4-12-4 and apply same quantity.

*Seed beds omitted, since most seeds of these plants are started in flats in greenhouses or frames. If seeds are sown in outside beds, handled the same as narrow-leaved evergreen seedlings, with the assurance that the soil is acid.

Golden Gate Park

Built on a Sandy Waste, Famous Park Exemplifies Work of Soil Reclamation

Increasing attention is being given to the task of reclaiming waste lands, either for agriculture or in the interest of scenic and æsthetic appeal. An example of such an effort, outstandingly successful by common consent, is the case of Golden Gate park, San Francisco. The recovery of this sandy waste and its transformation into a park is told by Eric Walther, park botanist, in the monthly publication of the soil conservation service.

In the days of '49, during the gold fever and for some time after, San Francisco was little more than a place of debarkation. The entire westerly part of the city and county was a long succession of sand dunes, shifting farther eastward with every breeze from the ocean beach. So dreary a spectacle was this desolate area that an official survey spoke of it as "uninhabitable by man." In spite of this, a few enterprising individuals squatted on the more desirable locations in the western portion of the city. By the time that law and order came to the fore, little was left of these former "Pueblo lands." As the outcome of a long battle by a few public-spirited citizens, a compromise was arranged by which 1,000 acres were returned to their rightful owner, the city, to become a public park. Many were the scoffers who doubted whether there would ever be anything to show for the taxpayers' money sunk into this desert of sand dunes. Since then, however, Golden Gate park has become world famous. Today it ranks among the foremost of the country—a monument to the civic spirit of San Francisco's citizens and to the invincible faith of its veteran superintendent, John McLaren, now in his fiftieth year of service.

Making Over the Desert.

The first step essential toward reclaiming this desert area was to prevent further movement of the sand dunes. Some preliminary attempts made use of barley and lupine seeds, sown during the rainy season, but success was only partial. Not until the famous beach grass, *Ammophila arenaria*, was imported from France at the suggestion of one of the Vil-

morins, was any real progress made. It is not too much to say that without this grass there would be no Golden Gate park today. Its principal virtue is its ability to survive being covered, seconded by the binding power of its long, tough roots. Usually planted from divisions in the winter or early spring, it is able to live through a 6-month rainless summer with only such moisture as is condensed from the local fogs.

Only now was it possible to consider planting anything else, and of the many plants tested only a few proved able to live in the almost pure quartz sand not only devoid of plant food, but as dry as any desert for nearly half the year. Outstanding among the survivors were two Australians, *Leptospermum laevigatum* and *Acacia longifolia*. Both thrived under the inhospitable conditions and served as the shelter for more decorative, taller trees. Of the latter the most successful turned out to be two Californians, the Monterey pine and the Monterey cypress, supplemented by *Eucalyptus globulus*, the blue gum from Australia.

Water Problem Solved.

With these as a framework on the foundation of pure sand was painted the finished picture of the park, into the making of which went much labor and material even more prosaic. One of the important factors contributing to the park's success in earlier days was the street sweepings, brought there from all over the city. More recently a sewage-disposal plant has been installed in the park, not only adding to the water supply, but also producing valuable fertilizer. The water problem, always an acute one, was solved by the discovery of an apparently ample supply in the park itself. A large steam pumping plant, supplemented by two windmills near the ocean, yields a daily total of nearly 2,500,000 gallons of water.

Within the shelter furnished by these plants were gradually developed lawns and flower beds, nooks and walks, lakes and waterfalls, all embowered in masses of flowering shrubs and trees, the whole constituting a masterpiece of the landscape artist.

AMERICAN NURSERYMAN

The many thousands of plant species tried in the course of this horticultural experiment were, of course, not all equally successful, but the majority did survive and today serve to make Golden Gate park a botanical garden in fact, if not in name.

Of recent years the work of plant introduction is being pursued more systematically, particular attention being given to plants native to regions having a climate similar to that of California. Several floral provinces having a like amount of rainfall, a rainless season of about the same duration, and a similar minimum temperature in winter, have been especially fruitful in yielding novel plants for the park collection.

Australia, especially western Australia, has perhaps contributed more than the rest of the world combined, including many interesting and beautiful proteads, bottle brushes, acacias, etc. New Zealand, if somewhat more humid, has yielded a nearly equal number of useful and showy plants, many of which are a legacy from the 1915 exposition. South Africa's special contributions are the many kinds of heathers. Chile, too, has furnished numerous ornamental items. The so-called Mediterranean region has contributed much of value, as cistus, cytisus, lavender, etc.

In recent years a great many novel plants have been introduced from China and adjacent regions, among which the various species of rhododendrons must rank first. The various species and hybrids of rhododendrons easily constitute the horticultural high light of the park season, and during April and May many plant lovers make pilgrimage, often from far away, to see the park's rhododendrons in flower. Numbering over 200 named varieties and nearly as many wild species, the park's collection of rhododendrons must be counted as one of the country's finest.

An even more exotic impression is created by the park's fine groups of tree ferns. To see these giants of the moist tropics thrive like this in what originally was a sandy desert is a surprise, indeed, and an accomplishment of which one may well be proud.

In the near future an even more intensive development of this botanical side of the park is contemplated, with the fruition of plans for an arboretum, financed by a private bequest.

Shade Tree Diseases

Conclusions from Studies of Several Thousand Specimens in the Laboratory of Massachusetts State College—By Malcolm A. McKenzie

In the shade tree disease laboratory at Massachusetts State College during the past year approximately 4,000 specimens of shade and ornamental trees were studied by cultural and other laboratory methods. About 100 different diseases were found to be present upon the material examined.

Because of the foremost importance of elms in New England, the threat of the Dutch elm disease has aroused considerable anxiety concerning the future of our principal shade tree. Interest in all diseases of elms has accompanied the widespread feeling aroused by the Dutch elm disease. Thus far, Connecticut is the only New England state which has been invaded by this disease, but affected trees have been found within fifty miles of Massachusetts, in New York as well as in Connecticut. Other diseases of the woody parts of elms have been observed as widely distributed in New England, but with the possible exception of *cephalosporium* and *verticillium*, none of the fungi has been observed as a parasite of sufficient virility to attack elms which receive reasonable attention as regards matters pertaining to the general health of the trees, such as the pruning of dead parts, treatment of wounds, watering during periods of dry weather, judicious feeding when conditions appear to warrant this practice, and the timely spraying of trees to prevent serious defoliation from attacks by leaf-destroying insects and fungi.

Leaf Diseases.

We have had an abundance of leaf diseases on New England elms this year, but the only disease of foliage observed in epidemic form was the blackspot caused by the fungus *Gnomonia ulmea*. To a limited extent throughout Massachusetts, and assuming serious proportions in the southwestern part of the state, defoliation of elms resulted this year from leaf infection by this fungus.

Many of our shade trees other than elms in New England are at present showing the effects of infection by leaf-inhabiting fungi. Maple, sycamore, ash, horse-chestnut, catalpa, birch, poplar, oak and willow are a few of the

trees upon which leaf spot diseases have been observed. The horse-chestnut leaf blotch has been noted as widely distributed and appears to be serious on the island of Rhode Island.

In general, satisfactory control measures are known for leaf troubles. If affected trees are discovered in late summer or autumn, control practices should begin with a sanitation program when the leaves fall. Spraying programs adapted to individual cases should be followed in the spring. Leaf spot diseases are frequently passed by as being of little importance to the life and well-being of a tree, but repeated defoliations may have serious consequences for a tree, especially if the defoliation comes early in the growing season.

Maple Wilt.

New England maples have shown the effects of the disease known as maple wilt this year to a greater extent than at any time during the past five years. The same fungus, *verticillium*, which causes this wilt is known to be associated with diseases of a number of plants other than maple, and this summer it was found associated with a wilting of peach in Massachusetts. New York, New Jersey, California and possibly other states have previously reported similar peach wilting. As in the case of the wilting of elms with which the *cephalosporium* fungus is associated, the course of this disease of maple is a rather uncertain one. In some cases affected trees have been reported to wilt completely and die rather rapidly, while other trees may be affected only to the extent of losing one or two branches. In years of drought this disease appears to cause its worst ravages, especially on street trees, which are always struggling under serious handicaps in our modern cities.

Of course, I do not want to give the impression that trees will thrive under conditions of excessive watering or feeding. Feeding or fertilizing without proper care or direction may be actually harmful to a tree, and the excessive water of flood conditions in March, 1936, killed some of our New England shade trees. Other flood dam-

age to shade trees resulted in the Connecticut valley where trees were uprooted and are now a total loss, resting on river banks sometimes far from their original site. Some trees which were not uprooted suffered by the destruction of limited areas of the cambium layer from ice floes and by the erosion of soil from about the roots. In the Merrimac valley crude oil, which the floods engulfed in their swift currents, was deposited upon trees in flooded areas and caused serious burning and sometimes the death of trees.

Many trees in New England are suffering from environmental conditions. Without going into elaborate details, it is apparent that we need to use every possible care in the following activities: Road construction work, the laying of drain pipes, building of walls and foundations, the removal and replacement of soil for any reason, attention to gas leaks, and installation and maintenance of power lines. In 1899 Massachusetts, and later other New England states, adopted a law requiring the election of a tree warden with prescribed duties in every town and city of the commonwealth. This law has helped greatly in the protection of trees on public property.

Forest Tree Diseases.

A few diseases of forest and ornamental trees perhaps deserve some mention. The white-pine blister rust, the European larch canker, the cytospora canker of spruce, the *nectria* bark disease of beech in Maine, and the chestnut blight are a few of these diseases which continue to arouse much interest in New England. The European larch canker, at present known to occur naturally in the United States only upon European larch in Massachusetts, was recently reported on golden larch. The larch canker may still be found in the vicinity of Cape Ann. The cytospora canker of spruce is known to occur widely in eastern United States and is a source of great concern to owners of ornamental spruces. The eternal question "Is the chestnut coming back?" never fails to excite speculation. Stories of blight-resistant or immune American chestnuts appear frequently. Many of the reports are

unfounded and most of the rest, if not indeed all of them, are premature. Chance and accidental escape from the blight are frequently mistaken for resistance or immunity. I watched one blight-free chestnut tree in Massachusetts in an area of heavy blight infection for ten years. After attaining a height of twenty-five feet without any evidence of disease, last year the new growth of the tree was affected in early summer and the progress of the blight has been rapid since that time.

In any consideration of tree diseases we must never permit the diseases to blind us to the real object of our study—the trees themselves. Many of us are continually receiving inquiries regarding the need for discontinuing planting of a particular tree because it is susceptible to a disease. I think it is a poor practice to advise against the planting of shade trees for fear of future destruction, unless it is certain that culture of the tree is impossible. Just at present the elm tree is the victim of prejudice planting. Let us not be alarmists in this matter; we cannot discontinue planting every tree that is attacked by pests, but we can study the control of the pests.

CONTROL PECAN ROSETTE.

Conclusive evidence that pecan rosette, a nutritional disease affecting pecan trees, may be controlled by application of zinc sulphate in any one of three ways has been proved by the bureau of plant industry of the United States Department of Agriculture.

Five years ago it was an ordinary

galvanized bucket that provided the clue by which A. O. Alben, J. R. Cole and R. D. Lewis of the United States pecan research laboratory, at Shreveport, La., traced down a cure for rosette.

Only in the past three years has the method of control been developed and proved of economic importance. When the galvanized bucket was first brought into use the rosetted leaves were dipped into a bucket of iron sulphate solution. A spray of this material did not prove effective the next season; so the scientists traced back and found that the zinc impurities dissolved from the galvanized bucket were really the source of the cure.

The three methods of applying the zinc sulphate, as recommended by scientists of the bureau of plant industry, are as follows:

1. Spraying a solution of zinc sulphate on the trees in the summer.
2. Applying zinc sulphate directly to the soil under the trees.
3. Inserting zinc sulphate into the tree trunks in early spring.

In spraying, the bureau specialists advise the first application of the zinc solution before the rosette appears on the leaves. This is usually about three to four weeks after the trees leaf out in the spring. The second and third applications should follow at three-week intervals and a fourth spray should be given in the event of heavy or severe cases of the disease.

The spray solution should contain one or two pounds of zinc sulphate to fifty gallons of water. The spe-

cialists emphasize the necessity of covering all the leaves with the solution if the control is to be effective.

For direct application in the soil—the mineral is broadcast immediately under the trees and disked in. This method, however, is effective principally on trees growing in neutral, acid or sandy alkaline soils. The rate of application advised in this method is from one-half to one pound of zinc sulphate for each year of the tree's age, or from one to two pounds for each inch in diameter of the tree trunk.

For direct insertions of the zinc sulphate into the trunk of the tree, the
(Concluded on page 11.)

LARGE SPRUCES IN DEMAND.

A symmetrical block of compact, low-branched Moerheim blue spruces is shown in the accompanying illustration. This group is the smaller of two devoted to these evergreens at Lake's Shenandoah Nurseries, Shenandoah, Ia. In these plantings, grown from imported stock, are specimens ranging from six to fourteen feet in height, with the larger sizes now in demand. While sale of the trees was slow during the depression, it is stated that more of them have been sold this fall and for spring delivery than were disposed of in the previous five years.

Business is much improved, states H. J. Deems, of the firm. Evergreens are coming out of the ground in fine condition, because of the fall rains. For spring buying, he believes, price will not be the difficulty, so much as obtaining first-class, well graded stock of the desired sizes.



Block of Symmetrical Moerheim Blue Spruce.

Plant Experiences of 1936

Observations on the Behavior of Some Herbaceous Perennials During the Current Growing Season, Testing Their Drought-Resistance—By C. W. Wood

As has been the yearly custom since this series on herbaceous perennials was started, I should like to set down some of the experiences and observations of the current growing season. The summer of 1936 was a most trying one throughout most of eastern United States; we of the north, who pride ourselves on our cool summers, suffered from intense heat along with the rest of the country. These conditions should have taught us much regarding plant behavior. I hope to point out a few matters here.

Pinks Resist Drought.

Most pinks are noted for their drought-resisting qualities, and the present season brought it out plainer than ever. With few exceptions, all the species in my garden came through the ordeal with flying colors. One of the exceptions was *Dianthus callizonus*, and it is so erratic that one is never sure of it even in the most ideal weather. Another exception was *D. rumelicus* in a south wall, where practically everything except thymes was burned to a crisp, even some *Phlox subulata* varieties suffering beyond repair. *D. rumelicus* in the field, however, came through in splendid shape. The outstanding new item in pinks was *Dianthus peristeri*. That species I have had under test for three or four years, each succeeding season adding to its laurels, until this year's trials of heat and drought make it safe to say that in this pink we have a plant of great merit. It is perhaps no more than an abbreviated form of the maiden pink, *D. deltoides*, but its whole make-up is so different that it serves an entirely distinct purpose. In the first place, it has never been over two inches high in my northern Michigan planting under the conditions it likes best, which include a sandy soil not very rich in organic matter and full sun. Three-year-old plants seldom have a spread of more than four inches. That makes a plant of such restrained growth it can be used in numberless situations in the garden, including close companionship with the most delicate subjects.

The flower color is generally a vivid rose-pink, though it shows slight variations, indicating that we may expect some good varieties in time to come. Another encouraging factor noted is the tendency to produce an occasional seedling with the habit of blooming continuously from spring until fall, though such plants never produce seeds here, a fact that explains their persistent blooming, I suppose.

While on the subject of pinks, I should like to mention another, *D. noeanus*, that impressed me favorably during the year. It makes a dense, spiny cushion—hence the name spinosum when it is offered erroneously as an *acanthophyllum*—an inch or so thick, from which spring numerous branching stems to a height of a foot, bearing small, fringed, intensely fragrant, white flowers. It has the most penetrating odor of any pink I know, one or two blooms perfuming an entire garden on a damp evening. The fragrance is so noticeable that one writer, Clutton-Brock, says it is perhaps the only pink with a disagreeable scent, though nothing of an unpleasant nature has ever been apparent here. On the other hand, delightful fragrance makes it a self-seller in my nursery.

I had not meant to spend so much time on pinks, but can hardly pass on without saying a few kind words for a plant I have under the label of *D. rumelicus*. The status of the plant is not clear to me at present, the name being rather confused in literature so far as I have traced it. Correvon says *Musalæ* and *rumelicus* are synonymous, while others give *rumelicus* as a form of *microlepis* and *Musalæ* as a distinct species. The only monograph of the genus at my disposal mentions neither name. Perhaps the name may be straightened out during the winter. In the meantime, if you can find seeds under either name, you may, if they are from isolated places, get one of the loveliest pinks you have ever seen. The plant I have in mind makes small tufts of dark glaucous foliage, scarcely a half-inch high, on which sit almost stemless deep pink flowers.

The plant would be worth while if it never flowered, its habit of growth and color of leaf being highly ornamental in themselves. All the pinks mentioned, with the exception of *D. callizonus*, which is always a problem, do well in light soil in full sun. They may be propagated from seeds which have been carefully grown away from other pinks, but preferably should be grown from cuttings. The latter, taken in early spring or after flowering, root readily in a common cutting bench.

Anemone Pulsatilla.

Few really good plants of my acquaintance can take the punishment from drought and heat that *Anemone Pulsatilla* can and come back smiling as it does. Type *Pulsatilla* and its white form, *alba*, are too well known to need comment, but no American lists of my acquaintance contain the out-of-ordinary forms like varieties *amoena*, *Farreri*, *grandis*, *slavica*, *violacea* and *Wolhynica*. None of these forms has been with me long enough to pass final judgment, but I might say that among them is beauty I little dreamed of.

I mention *Armeria corsica* (according to botanists it should be *Statice corsica*, but *armeria*, in this connection, is so firmly fixed in trade literature there seems no hope of changing it) as a possible source of good garden material. The foregoing statement was so qualified because I am not sure of the plant's hardiness, though it went through last winter in excellent shape, but that was not a good test, for we had so much snow that cold could not reach it. If it proves hardy, I can see a bright future for its dwarf, free-flowering habit and rosy terra cotta color. It is just as easy as the popular *armeria* and is propagated in the same way.

Campanulas.

There are so many good campanulas that it would be impossible for me to pick out the best in either the dwarfs or the taller-growing border plants. The trying summer period again proved, however, that one would have to look long and care-

fully to find a better dwarf than *C. turbinata* for general conditions. It is unfortunate that so many spurious plants are traveling under this name when the true thing is so lovely and so accommodating. The real plant grows about three inches high, instead of the carpatia height of the material usually sold as *turbinata*, and the flowers are usually larger than most forms of *C. carpatia*. As I have it from a number of European sources, the color varies somewhat in shades of blue, with an occasional milk-white. It stood up well here under open field culture during the devastating heat of last summer, indicating its desirability for average rock garden conditions. Among taller species, *C. phytidocalyx* has made a favorable impression here recently. It has the habit of *C. Rapunculus* (not *rapunculoides*) with 30-inch stems carrying a many-flowered raceme of dark blue flowers on the order of the peach-leaved bellflower. It stands up well in wind and rain, giving a long season of bloom.

I think that some of the chrysopsis species have been mentioned in this column before, but the tiny *C. falcata* so impressed me again this year that I am reminded to include it in this list. Without a bit of attention, not even a sprinkling, it made its usual restrained growth of small scythe-shaped leaves and produced its corymbs of tiny yellow asters all during July and August. Its natural home in dry sandy soil from Massachusetts to New Jersey indicates the treatment it should have in the garden and accounts for its ability to get along on next to nothing. It makes a good rock garden ornament or is useful in groups at the front of the hardy border, where its 6-inch stature would be in keeping with its surroundings. It is easily grown from fall-sown seeds.

Delphiniums.

Two delphiniums, *D. Brunonianum* and *D. Cineraria*, stamped themselves as worthy of consideration. The first of these is a foot-high plant made up of hairy stems and leaves and large musk-scented flowers of pale blue. It impressed me as a useful rock garden subject and a good border plant where a 12-inch plant of that character would fit in. *D. Cineraria* is one of my special favorites, filling every role within reason

that I have tried it in. If I am any judge of cut flowers, this delphinium has a brilliant future in store for it, particularly if it is used as an annual. That is a phase of the subject entirely aside from our present inquiry, however, which has more to do with a plant's landscape value. In the latter phase, the 10-inch growth (it can be manipulated to 15-inch stature during its initial flowering period if that falls within the first five months of its growth) and brilliant blue, spurless flowers make it a really good rock garden plant. I had it under field culture in 1935 and 1936, both trials giving splendid results in flowers, seeds and plants. It has about everything it takes to make a perfect plant, including ease of culture, like any of the Chinese group, long-blooming habit and ease of manipulation.

[To be continued.]

MISSOURI'S GOVERNOR.

Major Lloyd C. Stark, directing head of Stark Bros. Nurseries & Orchards Co., Louisiana, Mo., until he resigned last summer to take active part in the political campaign, was elected governor of the state of Missouri on the Democratic ticket, November 3.

Born on the old Stark nursery farm, near Louisiana, Mo., November 23, 1886, he was appointed by the late Champ Clark to the United States Naval Academy, where he was graduated in 1908, and served



Lloyd C. Stark.

AMERICAN NURSERYMAN

four years in the navy in various parts of the world.

When he resigned his naval commission in 1912, he returned to Louisiana and became vice-president and general manager of the Stark nurseries, an institution founded by his great-grandfather 119 years ago.

In 1914 he was elected president of the Mississippi Valley Apple Growers' Association and in 1917 he was chosen president of the American Association of Nurserymen.

In June, 1917, he entered the army as a captain of field artillery and was ordered to duty at Fort Meyer as field artillery instructor. In August, 1917, he was promoted to major and ordered to Camp Lee to assist in organizing the Eightieth division. In October he was ordered to the officers' artillery school of fire at Fort Sill, Okla., where he was graduated in January, 1918. Returning to the Eightieth division, he was placed in command of the Second battalion, 315th field artillery. In May, 1918, he was made acting assistant chief of staff at division headquarters, to embark the division for foreign service, and May 26 sailed from Newport News.

He commanded the Second battalion of his regiment, and later the entire regiment, which took an active part in the Meuse-Argonne offensive. During the latter part of that offensive he was placed in command of the entire 315th field artillery regiment. He sailed from Brest for the United States in May, 1919, and was mustered out at Fort Lee June 7, 1919.

Resuming the direction of the nursery firm, he was also active in civic affairs, being chairman of the \$75,000,000 road bond issue in 1928 and sponsoring the farm-to-market section of the bond issue amendment. He is a vestryman of the Episcopal church. He is married and has four children.

SOCIAL SECURITY FORMS.

In a few days forms to be filled out by employees under the social security act will be delivered through the post offices of the country. There has already appeared, and there will be more, in the public press about filling out these forms. The vital point to nurserymen is that, until a ruling has been issued from Washington, nothing should be done to

jeopardize the claim of the industry to the exemption of agricultural labor. So nursery employees, particularly those in the producing end, should seek to make good the claim of agricultural workers if they fill in their cards.

CONTROL PECAN ROSETTE.

(Concluded from page 8.)

specialists advise placing the mineral in half-inch auger holes bored two and one-half to three inches deep at intervals of four to six inches spirally around the circumference of the tree trunk. For the smaller trees, however, the bureau advises only the spray and soil treatments, as the severity of the trunk boring may injure its growth.

A teaspoonful of the zinc sulphate is placed in each of the holes. Care is taken not to let the mineral come in contact with the cambium, or growing layer, near the outside of the tree. This may be avoided by boring the holes at a slight downward angle and protecting the cambium layer with a small tin trough while putting in the chemical. Then the holes are plugged with cork stoppers, which are driven in until their outer edge is even with the cambium.

Results from treatments by trunk insertion indicate that it will not suppress the disease for any great length of time and may cause some injury. For these reasons the department specialists advise its use only when spraying is impossible and the soil treatments ineffective. Repeated auger-hole treatments would doubtless harm the tree eventually even though the inserted zinc salt caused no injury, which sometimes occurs.

Rosette occurs throughout the pecan territory, but is seldom found in undisturbed native stands of pecan timber. It is also likely to occur on almost any type of soil, including light, acid, sandy soil or heavy clay soils of high lime content. In the western pecan belt, however, it occurs more frequently on the heavy alkaline soils than on the lighter soils.

The disease may be recognized in its first stages by the crinkled appearance of the leaflets. In more advanced stages the leaflets become mottled, crinkled and narrow. Shoot internodes are shortened, and consequently the buds, leaves and shoots bunch into rosettes. Shoots and branches, as well as the leaves, die in severe cases.

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All pecan varieties appear to be susceptible to rosette, the specialists have found, although there are some varieties more susceptible than others. Those classed as very susceptible are Texas Prolific, Halbert, Stuart and Kincaid; moderately susceptible, Burkett, Western Schley, Success and Delmas; most resistant, Humble, Money-maker and Moore.

It is still too early to say how long the pecan trees will stay in a healthy condition after the zinc sulphate treatment, the bureau reports. However, indications are that the healthy condition lasts longer when the mineral is placed in the soil. In some severe cases the trees have recovered

and remained free of the disease for two to three years. In other cases the trees have rosetted to some extent the year after the zinc sulphate treatment. This was true, however, only when the rosette was severe and insufficient quantities of zinc were used.

MARTIN L. DAVEY, of the Davey Tree Expert Co., Kent, O., and governor of the state of Ohio since 1932, was re-elected governor for another 4-year term at the election last week.

A NURSERYMAN in Indianapolis, Ind., for the past fifty years, Harvey A. Burkhardt, age 86, died November 5 at his home there. Burial was in Mount Pleasant cemetery November 7. Five sons and two daughters survive.

Test Outdoor Mums

Results of Search Made in Minnesota to Determine Dependably Hardy and Early-Flowering Varieties

It is probable that more attempts have been made by commercial growers to secure dependably hardy and early-flowering outdoor chrysanthemums for Minnesota than, one might say, any two or three other perennials put together. It was with a knowledge of this fact several years ago that workers in the floriculture section of the division of horticulture at University Farm, St. Paul, Minn., laid out a plan in an endeavor to overcome the many failures reported with these popular fall flowers.

Some progress was made and several varieties were introduced and named. However, while these have not proved sufficiently early to bloom in the garden before the first frost, they have proved of value to commercial growers when grown either in a cloth house or on benches indoors. An exception must be made in the case of North Star, one of the varieties named in 1935, that, the writer has been told, made large plants and bloomed well outdoors in the southwestern part of the state before frost arrived. Consequently, it would appear that growers of perennial plants could recommend North Star to their customers in the southern half of Minnesota.

A different plan has, therefore, been laid down, and an attack will be made from a new angle. Pending further work, it is interesting to note the results obtained in this section from varieties, new or fairly old, that have been highly recommended and almost guaranteed to bloom before danger of frost.

Koreans Too Late.

University Farm is but one of several places in which the Korean chrysanthemums have been tried out. For several years the plants have grown well and made, one might say, extraordinary growth, but have failed miserably in flowering unless brought indoors and grown on in the greenhouse.

Barbara Cumming, from which much has been expected in the direction of early blooming, grew well and produced numerous buds, but none were open by October 3. This might be much too late for the northern half of Wisconsin, Minnesota and North Dakota.

So far Amelia has been a good doer, and although some of the plants seen by the writer were placed in a porch when severe frost descended on this section, they bloomed exceedingly well and had numerous flowers fully open for some time before being taken up from the garden.

The so-called Azaleamum (why this name it would be difficult to explain) has proved hardy in many gardens and has bloomed about the same time as Amelia, or Pink Cushion. Young plants from spring cuttings have bloomed fairly well, but on plants left outdoors over winter the flowers opened much earlier.

Pluie d'Argent appears to be the best bet for Minnesota growers. It makes good plants, blooms the early part of August and will continue to bloom for several weeks.

The Japanese mountain chrysanthemum has at no time paid for the trouble

of growing it. A few varieties originated by workers in the United States Department of Agriculture show some promise. Roszike had several flowers open by the end of September, as did October Girl. The best from the point of earliness was Elena, pinkish white, while No. 156, a good single white, was close to Elena both in size of flowers and earliness.

Summing up the best varieties, they are Pluie d'Argent, Azaleamum, Elena and U. S. D. A. No. 35354, followed by a few more of the numbered varieties from the Department of Agriculture. This brief account may be of some service to commercial growers in this region, who will be asked for garden chrysanthemums as long as chrysanthemums are known and grown.

Apparently it is not a matter of sufficient sunlight. This section probably has too much. The point has been raised with regard to the ultra-violet rays, which again may be a factor to consider. At any rate, Pluie d'Argent, Azaleamum and Amelia lead the procession and give promise of a type of mum that can be honestly recommended by growers of perennial plants. These varieties may conceivably be followed by others of equal merit.

MINNESOTA MEETING PLANS.

Arrangements have been completed to hold the convention of the Minnesota State Nurserymen's Association at the Lowry hotel, St. Paul, December 14 and 15.

A full two-day meeting has been planned, with an informal supper and social gathering on Monday evening. The program is not yet definitely settled, but we have assurances from a number of prominent and experienced nurserymen as to their part on the program.

A good attendance is expected this season, not only of Minnesota men, but also of the nurserymen of the surrounding states, so that it will be a representative gathering of the growers throughout the north section.

W. T. Cowperthwaite, Sec'y.

AMERICAN NURSERYMAN

EASTERN CANADA MEETING.

At Toronto November 23.

The agenda for the annual meeting of the Eastern Canada Nurserymen's Association, which will be held November 23 in the Royal York hotel, Toronto, Ont., has been announced as follows by President E. B. Luke, Montreal, Que., who also comments briefly on some of the features:

Minutes of last meeting.

Financial statement.

Report of the president.

"The Tariff"—Holland and France are now of the gold standard. What effect will this have upon imports of nursery stock into Canada from these countries?

"Plant Patents and Trade-marks"—M. B. Davis, chairman of the plant registration bureau of the Canadian Horticultural Council, has made a thorough study of required legislation and will attend and explain his views.

"Horticultural Standards for Exhibitions"—A report and recommendation of the horticultural council committee upon this subject is generally used as the standard in judging at exhibitions. It is advisable to discuss the proposed revisions.

"Trade Trends."

"Grades for Nursery Stock"—There is a difference in the methods adopted by various nurserymen in classifying grades. Should uniform association grades be established?

"Publicity to Stimulate Planting and Gardening Interest"—No other organized professional group is more concerned in stimulating interest in garden and planting material. Little is presently being done by members of the association.

"Credits"—Can more be done by the association to protect members against credit losses?

"National Arboretum"—The arboretum at Ottawa only scratches the surface insofar as varied plant material is concerned. The members are interested in selling to the public only varieties that are definitely hardy and give good results under Canadian climatic conditions. Ottawa is a splendid trial ground, but the educational value of the present arboretum is negligible. What should and can be done?

Macoun memorial.

Election of officers.

Any other matters.

The present officers of the association are: Honorary president, E. D. Smith, Winona, Ont.; president, E. B. Luke, Montreal; vice-president, F. W. Wellington, Toronto, Ont.; secretary-treasurer, L. F. Burrows, Ottawa, Ont., and directors, R. Endean, Richmond Hill, Ont.; L. L. Smith, Winona; H. B. Dunnington-Grubb, Toronto, and Kenneth MacDonald, Ottawa.

THE Nettlewood Nurseries, Burlington, N. C., have just completed the construction of beautiful new display grounds.

THE twenty-seventh annual meeting of the Western Washington Horticultural Association will be held December 11 and 12 at Mount Vernon, Wash. Several horticulturists from the western Washington experiment station, Puyallup, are scheduled to present addresses on production problems.

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OREGON NURSERYMEN MEET.

Officers Elected at Portland.

At the annual fall business meeting of the Oregon Association of Nurserymen, held at Portland, Ore., October 22, Earl Houseweart, Woodburn, was elected president. A. H. Steinmetz, Portland, was elected vice-president; J. E. French, Portland, was elected secretary, and William Enchede, Orenco, was chosen treasurer. Paul E. Doty, Portland, is the retiring president. The following will constitute the board of directors: J. Frank Schmidt, Troutdale; Ralph Johnston, Portland, and Paul E. Doty.

There was an open forum during which valuable ideas were exchanged, and the group felt optimistic as to the outlook for the future so far as the nursery situation is concerned. Demand for fruit trees was reported to be active; also roses and ornamentals of all kinds are in demand both locally and from the eastern and southern points. Members were warned not to overplant for future orders, lest there be a big surplus. Prices have been firm; they have been no lower than last year, but practically no higher, either.

J. S. Weimer, nursery superintendent of the state of Oregon, addressed the group with an interesting and informative talk.

The association plans to have a one-day session in January, probably at Portland.

NORTH JERSEY NOTES.

Because the regular November meeting of the North Jersey Metropolitan Association of Nurserymen fell on Armistice day, when many members had other arrangements, the session was postponed until Wednesday, November 18, in the courthouse, Paterson.

The community short course in nursery management being conducted in the courthouse at Paterson on successive Fridays by Rutgers University, New Brunswick, with the cooperation of the county extension service and a committee of the North Jersey Metropolitan Association of Nurserymen, is flourishing. From sixty-one members, the class has grown to seventy-one. October 30, Prof. H. R. Cox gave a lecture on "Soil Management." November 6, B. B. Farnham, of the college staff, lectured on maintaining soil fertility and using commercial fertilizers intelligently. He urged nurserymen to use a system of block rotation and to keep a card file for each block to give an up-to-date record of sales and a corrected inventory. November 13, Dr. Richard P. White, associate professor of plant pathology, gave the lecture.

William Halliey, Sec'y.

THE contract for the landscape work around the new senior high school in Bayonne, N. J., was awarded to Meadowbrook Nursery, Inc., Tenafly, whose bid of \$1,077.75 was the lowest of five.

THE Spokane Chronicle recently carried a write-up of the recommendation of Norby C. Balzer, of the E. C. Balzer Nursery, Spokane, Wash., that a census of the city's trees be made, to be followed by a comprehensive plan of future plantings and development, for the beautification of the city's streets.

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Reviews of New Books

THE WILD GARDEN.

Keen appreciation of native plants and of the beauty of the wildwood often leads to the desire to develop a wild garden. The task of thus reproducing natural settings is not an easy one, which makes welcome such guidance in the matter as that offered in a recent publication of Doubleday, Doran & Co., "The Wild Garden," of which Margaret McKenny is the author.

The book, of pocket size, with over 100 pages of text and index, is designed as a practical handbook in establishing wild gardens on sound principles of regional planning and shows proper plant associations and their soil and climatic affinities. Individual chapters instruct how to plan for woodland, seaside, swamp or bog, and hillside gardens. Each chapter contains suggested lists of plants, ferns, trees and shrubs suitable for the various types of gardens mentioned.

The propagation of wild flowers from seeds and by cuttings, layers and divisions is carefully handled. Special attention is given to the trailing arbutus and fringed gentian. There are recommendations of plants for the wild garden south of New England, west of New England and in western Oregon and Washington. Added are suggestions for wild flower preservation.

Cloth-bound and illustrated with a half-tone frontispiece and ten line drawings by Robert Snedigar, the book is priced at \$1 per copy.

HARDY CALIFORNIANS.

"Hardy Californians," by Lester Rowntree, is a book that for some will doubtless create a new picture of the flora of this western state. A wide variation of climate and terrain are to be found there, with a corresponding diversity in the natural plant life. Travel literature tends to feature the palms and tender verdure of the south. This writer tells of the hardier perennials that she has sought and found in the less frequented, often inaccessible sections of the state.

For several months each year for the past decade, Lester Rowntree has made botanizing journeys to different localities, in order to locate plants that had aroused her interest, but which she could not find in the trade. At the same time, she studied the environment of the plants to discover the secret of their successful growth in the location, so that she could cultivate them elsewhere. "Hardy Californians," published by the Macmillan Co., indicates to what excellent advantage the writer spent her efforts.

The book, containing over 250 pages, offers a rich assemblage of data, presented simply and in exceedingly readable manner. Successive chapters tell of the flora on the mountain tops, at the timber line, in the mountain meadows and where the rivers and forests begin. Then come sections devoted to special groups—the buckwheats, pentstemons, lupines and violas. Other chapters deal with plants to be found north of San Francisco and with some of California's wild bulbs. Little-known but worth-while annuals are given a chapter, also. The final comments are on the planting and care of the wild flower garden.

All the notes contained in the book are the author's own, taken on her many trips,

and none of the material has been previously published. The splendid illustrations, of which there are about seventy, are full-page half-tones from photographs taken by the author. Lester Rowntree, now a California resident, is a well known authority and writer on the wild flowers of that state, having had also personal experience with the difficulties met in growing the flowers elsewhere. She does much to encourage a wider use of the subjects by her suggestions in this book.

Cloth-bound, the volume sells for \$3.50 per copy, postpaid.

HARDY BULBS.

A book of timely issuance is "Adventures with Hardy Bulbs," by Louise Beebe Wilder, avowedly propaganda to encourage a wider use of bulbous plants in this country. Well known in the field of horticulture, this writer is herself a pioneer in the use of bulbs which are not widely grown and she has had much experience with bulbs of all kinds in two types of New York gardens over a period of many years. The publisher is the Macmillan Co.

Attention is called in this book to many species and varieties not generally grown on this side of the Atlantic. In the culture of these, opportunities for profit in a time not distant can be expected, and for this reason, Mrs. Wilder's comments on her successes and failures may well be conned by those who plan to cater to the first strong demand for the material that presents. In view of the impending end of the narcissus quarantine, the writer's thorough treatment of daffodils is particularly timely, and those interested in the wild tulips will appreciate her discus-

sion of their behavior under varied conditions.

Much is given on little known native bulbous plants. The commoner species and varieties are also discussed, and the book contains many historical references and suggestions for interesting arrangements of different material in plantings, as well as descriptions and cultural details. The major part of the book, 321 of the 363 pages, consists of specific comments on representatives of about thirty-five genera, arranged alphabetically. Lilies and orchidaceous plants are omitted, with a few others.

There are chapters on bulbs for the rock garden, for naturalizing and for beds and borders, also on a few tender bulbs. Illustrative material includes both reproductions of photographs and of drawings made in the author's own garden by Walter Beebe Wilder, to whom the book is dedicated. A comprehensive index includes both botanical and common plant names. Attractiveness is given by a green cloth cover, decorated with gold letters. The publisher's price is \$5 per copy, postpaid.

BULLETINS RECEIVED.

"Oriental Fruit Moth Control in Quince Plantings," by Derrill M. Daniel and James A. Cox, issued as bulletin No. 669 by the New York state agricultural experiment station, Geneva, N. Y., presents the results obtained during four years' investigation of this problem in New York. The program suggested is as follows: Seven applications of (1) lead arsenate, three pounds, plus some sticker or spreader, or (2) summer oil, one gallon, plus nicotine sulphate, one pint, or (3) Black Leaf 155, six pounds. In each of the alternatives the applications are to begin at the calyx and are repeated every two weeks throughout the season until a month before harvest.

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SATIN MOTH BAN REVOKED.

The satin moth quarantine (federal plant quarantine No. 53), which became effective January 1, 1922, to prevent the spread of the satin moth (*Stilpnotia salicis* L.), has been revoked, effective November 2, 1936, the United States Department of Agriculture has announced. This quarantine affected parts of all the New England states and the state of Washington.

Lee A. Strong, chief of the bureau of entomology and plant quarantine, says that when the quarantine was placed by the department the known infested area lay within the area regulated by the gyp moth and brown-tail moth quarantine and there was an organization at hand, therefore, for quarantine enforcement purposes. This condition has ceased to be true and, at the present time, there are no federal facilities for the enforcement of quarantine regulations in Oregon and Washington, where the insect has become established, in Oregon only recently. Mr. Strong also states that because of the effectiveness of several native and introduced insect parasites in reducing the intensity of infestation and because of the relatively minor commercial economic value of the host plants—principally the poplars and willows—it is doubtful if the satin moth will ever become a serious pest in this country, although local control measures for the protection of foliage of shade or ornamental host plants may be required from time to time.

The revocation of the quarantine will leave states free to take such action as they may desire to prevent the further spread of the satin moth.

ROSE REGISTRATIONS.

The American Rose Society's registration committee has approved applications for registration of the following roses. Notice of these registrations has been sent to rose organizations in foreign countries and trade papers.

If no objections are raised before December 22, 1936, the registration of these names will become permanent as of that date:

Golden West. Hybrid tea. Originated and introduced by Clyde H. Stocking, San Jose, Cal. Said to be a sport of Duchess of York, with golden yellow flowers, six inches in diameter; twenty to twenty-five petals, and a strong tea fragrance. Said to be a profuse and continuous bloomer, un-injured in winter.

Climbing Mme. Jules Bouché. Climbing hybrid tea. Originated by J. H. van Barneveld, Puente, Cal., and introduced by California Roses, Inc., Puente, Cal. Said to be a climbing sport of Mme. Jules Bouché, with a flower like its parent, but on a climbing plant which blooms all season more constantly than any other white climber to date. Canes reach twelve feet, spreading out well. Its hardiness has not been tested.

Eternal Youth (Eterna Giovanezza). Hybrid tea. Originated by D. Aicardi, San Remo, Italy; introduced by the Jackson & Perkins Co., Newark, N. Y. Said to be a seedling of Dame Edith Helen X Julien Potin. Of the type of Lady Alice Stanley. Is four to four and a half inches across, with fifty petals; light pink heavily suffused orange salmon. Moderate fragrance. A free and continuous bloomer, reaching three feet high, with average hardiness.

Sunmount. Hybrid tea. Originated and introduced by Nicholas Grillo, Mildale, Conn. Said to be a sport of Joanna Hill, resembling it in form, but of a clear, pure yellow color. Flowers four inches, more or less, in diameter; about fifty petals, extremely fragrant. Growth vigorous. A profuse and continuous bloomer. Hardiness not tested.

Golden Frills. Hybrid tea. Originated and introduced by Bobbink & Atkins, Rutherford, N. J. Said to be a sport of Feu Joseph Loomans, with pure yellow flowers, averaging thirty-two petals. Slight fragrance. All other characteristics the same as its parent's.

Coral Cup. Hybrid tea. Originated and introduced by Bobbink & Atkins, Rutherford, N. J. Said to be a sport of Gloria Mundi, with 4 1/4-inch flowers of a coral coloring, twenty-eight petals, slight fragrance. Blooms in clusters.

R. Marion Hatton, Sec'y.

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Answers to Inquiries

ELECTRIC PROPAGATING BED.

I am interested in getting full information about electricity for heating propagating beds in greenhouses. I have a bench 3x22½ feet that I would like to heat in this way. The house is usually kept about 45 degrees at night. The house is 24x26 feet and has four benches, two being three feet wide and two being six. At present I desire to use just the one bench for propagation, but might later like to use the others and would like to have the electrical lead figured in that way. Also at times, I may be using only about one-half of the bench 3x22½ feet and would not care to heat the rest. The house is now heated by hot air only and has no water or steam pipes.

What would the electricity consumption be per bench? Should soil temperature be increased in the daytime to correspond with the air temperatures?

What is your opinion of electricity for heating propagating benches?

W. N. N.—Minn.

The cost of the electrical heating of a propagating bed depends on the temperature maintained, the thoroughness of the insulation and the cost of electricity. The amount used will probably average for a propagating bed measuring 3x12 feet from one and one-half to two kilowatt hours per twenty-four hours in a greenhouse heated to 45 degrees.

Excellent results are obtained from electrically heated beds, since they provide a uniform temperature, especially when used in connection with a thermostat.

Soft coal cinders furnish a cheap insulating material. After making a solid bed of soil up within nine inches of the top of the sand, fill in with four inches of cinders, and after wetting them down and packing them so that they will not settle, cover them with a double thickness of asbestos paper. On this spread one inch of sharp sand and then lay down the heating cables. Spread an inch of sand over the cables and then put down some kind of divider, such as a layer of wire netting, to prevent injury to the cable when the sand is changed. When the bed has been filled with three inches of sand it will be complete. If the temperature over the bed is not more than 5° degrees, the benefit from insulation will not be especially marked and a propagating bed can be started in a heated greenhouse on an ordinary raised bench, starting with a double layer of asbestos paper.

The main switch may be in the workroom or under the ridge at the center of the house, at which point the outlet, or distributor box, from which cables, or looms, can be run to the different beds, should be located.

The heat is supplied by lines of waterproof hotbed heating cable laid in the sand. With a 110-volt current, it is possible to supply sixty feet of heating cable, or 120 feet with 220 volts. For 220 volts, a third, or neutral ground wire is needed from a transformer. A bed 3x12 feet can be heated with sixty feet of cable. In fact, this amount of cable will heat nearly twice this much space to 55 degrees in a house at 45 degrees, but not less than sixty feet should be

used with a 110-volt current. The surplus heat can be cut off by means of a thermostat, which should always be used. It should be connected with the heating cables, with the bulb buried one inch in the sand.

The propagating bed should be covered with a frame like those used for a hotbed with two hotbed sash. These can be raised or lowered to control the temperature of the air over the propagating bed and the thermostat can be set to give the desired amount of bottom heat, which is usually 10 degrees more than the soil temperature. There should be a switch for each bed. The heating cable should be placed to form three elongated U's, about ten feet in length and with the wires six inches apart, the outer ones being about three inches from the sides of the beds, resembling a heating coil built up with return bends.

The heating cable used for hotbeds and propagating benches generally has a special No. 19 copper wire, which is wrapped in felted asbestos, with a double covering of varnished cambric and then, over all, a lead jacket, making a cable about one-quarter inch in diameter.

It is probable that, when used in a heated greenhouse, only four lines of cable will be needed and a 60-foot length will answer for a bed 3x15 feet.

SIZE OF PROPAGATING HOUSE.

Please advise a method of piping, giving the sizes of pipes and also the size of the boiler, to heat with hot water the propagating house shown in a sketch sent you. Is there any merit in this design?

H. L. F. N.—Ind.

The house is 10½x60 feet, with a height of nine and one-half feet at the ridge and six feet at the eaves, of which three and one-half feet are glass. The two benches are four feet in width, and the top of the side board is two and one-quarter feet above the center walk. The house appears to be built on a side hill with the ground at the rear on a level with the top of the cement wall, while twelve inches of cement are exposed on the front side.

There is considerable difference of opinion regarding the exact dimensions of a propagating house, but three and one-half feet are about as wide as the benches should be, and eighteen inches, which appears to be the width proposed, are rather narrow for a walk, especially if seed flats are to be carried overhead.

A height of three feet for the benches and a width of three and one-half feet will suit most propagators. There would then be three feet of glass in the walls.

For heating such a house, run a 2½-inch flow pipe at the eaves on each side, with a drop of four or five inches. These flows may be supplied by a 3-inch main, or they may start at the boiler.

At the farther end of the house, connect each flow pipe with a coil of four 2-inch returns, unless the house is exposed to extremely cold winds, in which case a fifth return can be used to advantage on one and perhaps on both sides of the house.

For convenience in installing the coils, they may be built with a miter where the flow pipes are connected.

DUTCH ELM AREA ENLARGED.

New areas have been added to the district in the vicinity of New York city now under quarantine on account of the Dutch elm disease. The regulated area was extended under an order by Secretary of Agriculture Wallace because of discovery of new infections of elm trees in the newly quarantined areas.

The amendment to the Dutch elm quarantine added to the regulated areas: Two towns in Connecticut—Ridgefield and Wilton, in Fairfield county; four towns in New York—Goshen, Minisink and Wawayanda, in Orange county, and Huntington, in Suffolk county, and numerous townships and boroughs in New Jersey.

Under the modification the following areas are now under regulation:

Connecticut—Towns of Darien, Fairfield, Greenwich, New Canaan, Norwalk, Ridgefield, Stamford, Westport and Wilton, in Fairfield county.

New Jersey—Counties of Bergen, Essex, Hudson, Morris, Passaic, Somerset, and Union; all of Hunterdon county except the townships of Alexandria, Delaware, Holland, Kingwood and West Amwell, and the boroughs of Frenchtown, Lambertville, Milford and Stockton; townships of Hopewell, Princeton and West Windsor, and the boroughs of Hopewell, Pennington and Princeton, in Mercer county; all of Middlesex county except the townships of Cranbury and Monroe, and the boroughs of Helmetta,

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New York—Counties of Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland and Westchester; towns of Blooming Grove, Chester, Goshen, Highland, Minisink, Monroe, Tuxedo, Warwick, Wawayanda and Woodbury, in Orange county; towns of Carmel, Philipstown, Putnam Valley and South East, in Putnam county, and the town of Huntington, in Suffolk county.

AWARDS OF M. H. S. ANNOUNCED.

The trustees of the Massachusetts Horticultural Society report the following horticultural awards for the present year: George P. White medal of honor, to Harlan P. Kelsey, East Boxford, Mass., for his services to horticulture in introducing to more general cultivation many hardy plants, especially those from the Carolinas; assisting in the preparation of Standardized Plant Names, serving as an officer in the American Association of Nurserymen, assisting in the development of national parks and serving as a trustee in the Massachusetts Horticultural Society, also in being president of the Horticultural Club of Boston since the death of E. H. Wilson.

The Jackson Dawson memorial medal goes to Robert M. Grey, whose father had charge many years ago of the once famous Corning collection of orchids. Mr. Grey was for a number of years superintendent of the Oliver Ames estate in North Easton, Mass., doing especially fine work with masdevallias and other orchids, and for nearly thirty-five years was located at Solidar, Cienfuegos, Santa Clara province, Cuba, doing experimental work on sugar canes, orchids and various other economic plants for E. F. Atkins, and more recently was connected with the botanical gardens of Harvard University, Cambridge, Mass., devoting his time to research work. Mr. Grey has now retired.

The Thomas Roland medal goes to Elmer D. Smith, Adrian, Mich., for his great skill in raising numerous chrysanthemums of high quality which are popular both in Europe and America. To Norman Taylor, New York, goes the gold medal of the Massachusetts Horticultural Society for his work in editing and preparing "The Garden Dictionary," one of the finest horticultural works in recent years. W. N. C.

SUGAR CANE PATENT.

Rummler, Rummler & Woodworth, patent lawyers of Chicago, announce that the following new plant patent for sugar cane was issued October 27:

No. 203. Sugar cane. Benjamin Arthur Bourne, Clewiston, Fla. A variety of sugar cane characterized particularly by its early maturity, resistance to disease, high sugar content, distinctive color and shape of stalk and bud, distinctive pattern of stem epidermis and strong, upright growth.

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- 25,000 ELMS, American, Vase and Moline, transplanted, up to 4 inches.
- 10,000 MAPLE, Norway, transplanted up to 2½ inches.
- 3,000 ARBOR-VITÆ, Pyramidals, up to 8 feet.
- 400 PINE, Mugho, from 2 to 4 feet.
- 1,000 SPRUCE, Norway, sheared, none better, 3 to 5 feet.
- 600 JUNIPER, Pfitzer's, 5 to 8 feet spread, beauties.
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CATALOGUES RECEIVED.

[In writing for a copy of any of the catalogues reviewed below, please mention that you saw it described in The American Nurseryman.]

Lissadell, Sligo, Irish Free State.—Price list, autumn, 1936, and spring, 1937, of seeds of alpine, herbaceous stock, shrubs and native material of the Irish Free State, the common name being included in the list of the natives. Each grouping is alphabetized.

T. G. Owen & Son, Inc., Columbus, Miss.—There are several photographs of nursery plantings reproduced in the wholesale price list for this fall and next spring issued by Owen's, doing both a florists' and a nursery business. Chiefly nursery material is listed in the catalogue—field-grown material, with mention of a few potted plants of florists' stock available in season. There are lists of ornamental evergreens and lining-out and specimen grades of nursery stock.

Katzenstein & Co., Atlanta, Ga.—As successors to Otto Katzenstein & Co., Katzenstein & Co. are issuing "Tree Seeds," a complete price list for the season 1936-1937. In separate sections are listed conifers, trees and shrubs, fruit seeds, seeds of palms, tropical and subtropical plants; lining-out stock, fruit tree seedlings, woods-grown stock, and roots and seeds of medicinal plants. Some horticultural books are handled, also tree labels.

The Jenkins Nursery, Winona, O.—Trade price list for fall, 1936, printed in green on white paper. The folder enumerates evergreens, transplanted shrubs, lining-out evergreens and lining-out shrubs.

Gardens of the Blue Ridge, Ashford, N. C.—Stock offered in a November 30-day sale is listed in a 4-page folder. The material includes deciduous and evergreen trees, shrubs and vines, native ferns, bog plants, native lilies and orchids, also native perennials, all the stock being clipped hardy. Boxes of holiday greens are mentioned.

Smith's Gardens, Clarkston, Wash.—Collection of fifty iris roots (surplus stock) offered on a mimeographed sheet, with collections of other stock, like tulips, croci, peonies, rockery plants, violets and bleeding hearts.

Verhalen Nursery Co., Scottsville, Tex.—Wholesale price list, fall, 1936, presents, in alphabetized lists, conifers, broad-leaved evergreens, some deciduous material and patented roses. A center spread shows wisteria (tree form) in bloom, and there are other photographs reproduced.

Texas Nursery Co., Sherman, Tex.—Fruit trees, grapes, nut and shade trees, hedge plants, broad-leaved evergreens, coniferous evergreens, deciduous shrubs, vines and roses are included in the Texas listings, each one alphabetized. There is a general index, with "Class Index" and two pages for memoranda. Wholesale prices are given.

H. Ernest Conwell, Inc., Milton, Del.—Filled with pictures of planted estates and nursery plants, "Boxwood" features a catalog of Old English and American boxwood—specimen stock and material for plantings in hedges and window boxes and about foundations. The four large pages, printed in green, are replete with reproductions of fine photographs.

Lindley Nurseries, Inc., Greensboro, N. C.—With covers showing all the plantings done by the firm, this pocket-size catalogue is printed in green by the planograph system and is liberally illustrated. Among specialties listed are fruits for the south. The stock is grouped under "Hardy Flowering Shrubs," "Distinctive Trees and Shrubs," "Deciduous Shade and Street Trees," "Roses," "Broad-leaved Evergreens" and "Coniferous Evergreens."

A NEW incorporation at New York is the Otter Kill Farms Corp., dealing in fruit, grain and nursery stock, with \$100,000 capitalization.

DONATION to the city park system of about 1,500 trees has been made by the Evergreen Nursery, Everett, Wash., of which Thornton Sullivan is manager.

WORKMEN are planting part of the 10,000 young elm trees presented to the park department of Indianapolis, Ind., by C. M. Hobbs & Sons, Inc., Bridgeport.

GROUND has been broken for a new office building, to be completed next spring, on the 80-acre tract of the Hillsdale Landscape & Nurseries Co., Indianapolis, Ind.

MEMBERS of the Arizona Citrus Nurserymen's Association made a tour of valley nurseries near Phoenix, Ariz., October 16, to check on the number of citrus trees available and to study cultural practices.

GEORGE F. PETERSEN, Chico, Cal., nurseryman, has been selected as an alternate on the nursery fruit tree industry board, which administers the marketing agreement for the California deciduous fruit and almond tree industry.

INDEX TO ADVERTISERS

American Florist Supply Co.	19
Andrews Nursery	14
Barteldes Seed Co.	20
Bobbink & Atkins	17
Burr & Co., C. R.	13
Campbell-Hausfeld Co.	19
Canterbury	13
Chase Bag Co.	19
Chase Co., Benjamin	20
Cottage Gardens	15
D. & C. Hardy Plant Nursery	16
Dixie Rose Nursery	13
Egyptian Nursery & Orchard Co.	16
Eschrich's Nursery	16
Evergreen Nursery Co.	13
Garden Shop, Inc.	20
Gardens of the Blue Ridge	14
Herbst Bros.	19
Hill Nursery Co., D.	13
Hobbs & Sons, C. M.	17
Hogansville Nurseries	15
Houston Blueberry Nursery	14
Howard-Hickory Co.	15
Jackson & Perkins Co.	13
Jewell Nursery Co.	15
Kallay Bros. Co.	13
Kingsville Nurseries, Inc.	16
Lang Rose Nursery	13
Leonard & Son, A. M.	17
Lovett, Lester C.	13
Martin Co., Jos. F.	16
Mathews-Eggert Nursery	15
McGill & Son, A.	15
Milton Nursery Co.	15
Moss Co.	19
Mount Arbor Nurseries	15
Mount Vernon Nursery	13
Orenco Nursery Co.	15
Pacific Coast Nursery	15
Peterson & Dering, Inc.	15
Princeton Nurseries	13
Process Color Printing Co.	17
Revolite Corp.	20
Robinson, E. D.	17
Scarff's Nurseries	14
Shenandoah Nurseries	12
Skinner & Co., C. W.	19
Smith, J. Russell	17
Southern Nursery Co.	15
Stahelin's Nursery	14
Storrs & Harrison Co.	11
Tennessee Nursery Co.	18
Washington Nurseries	11
Westminster Nursery Co.	15
WhiteShowers, Inc.	19
Wickliffe, Ray	18
Willowbend Nursery	14
Wilson & Co., Inc., C. E.	13
Wisconsin Moss Co.	19

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